

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: M. Takada, H. Minoura,
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Application No.: 09/380,994

Examiner: R. Bekkering

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Group Art: 2841

Title: PRINTED WIRING BOARD AND METHOD FOR MANUFACTURING
SAME

CERTIFICATE OF MAILING

I hereby certify that this correspondence, along with any papers indicated as being deposited as first class mail in an envelope addressed to Commissioner for Patents, Box No Fee, Washington D.C. 20231 on May 15, 2001.

Date

May 15, 2001

Denise Grisack

Commissioner for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT AND RESPONSE TO RESTRICTION REQUIREMENT

Sir:

In the Claims

Please amend the claims as follows:

4. (Amended) A printed wiring board comprising an internal insulating substrate having a conductor circuit formed on a surface thereof, an internal insulating layer laminated on the surface of the internal insulating substrate, and an external insulating layer laminated on a surface of the internal insulating layer, the internal insulating layer and the external insulating layer having an internal conductor circuit and an external conductor circuit respectively;

wherein the internal insulating layer comprises two or more internal insulating layers.

B₂
C₂
7. (Amended) A method of manufacturing a printed wiring board having a plurality of conductive layers which are built up via insulating layers respectively and are electrically connected to one another via interconnecting through holes, the method comprising the steps of:

forming conductive layers on a plurality of insulating layers respectively;

laminating and press-bonding the resulting insulating layers to form a multilayer substrate;

irradiating a laser beam on the multilayer substrate at interconnecting through hole-forming portions to define interconnecting through holes such that bottoms of the through holes reach the conductive layers;

covering the walls of the interconnecting through holes with metal plating films; and

fusing solder balls against the interconnecting through holes and filling them with solder.

B₃
10. (Amended) The method of manufacturing a printed wiring board according to claim 7, wherein the insulating layers are flexible films made of a glass fiber-reinforced resin.

B₄
11. (Amended) A printed wiring board comprising an interconnecting through hole penetrating an insulating substrate, a covering pad covering one opening of the interconnecting through hole, and a conductor circuit provided

along a peripheral edge of the other opening which remains open;

B4
C5
wherein the covering pad and the conductor circuit are electrically connected to each other via a metal plating film covering a wall of the interconnecting through hole; and a solder ball for external connection is located onto the surface of the covering pad at a position offset from the interconnecting through hole.

B5
14. (Amended) ~~the~~ printed wiring board according to claim 11, wherein the surface of the insulating substrate is covered with a solder resist and the interconnecting through hole is filled with the solder resist.

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15. (Amended) A printed wiring board comprising an interconnecting through hole penetrating an insulating substrate, an annular pad disposed along a peripheral edge of one opening of the interconnecting through hole so as not to cover the opening, a covering pad covering the other opening of the interconnecting through hole and a conductor circuit connected to the covering pad;

wherein the annular pad and the covering pad are electrically connected to each other by a metal plating film covering a wall of the interconnecting through hole; and a solder ball for external connection is located onto the surface of the annular pad at a position offset from the interconnecting through hole.

B7
18. (Amended) The printed wiring board according to claim 15, wherein the surface of the insulating substrate is covered with a solder resist.

Please cancel claims 5, 6, 8, 9, 12, 13, 16, and 17.

Remarks

This paper is filed in response to the Restriction Requirement of March 27, 2001 in which the Patent and Trademark Office (Office) issued a ten way restriction in connection with this case. The Office did not identify the claims corresponding to each count, only the Figures in accordance with the chart below:

Invention 1	Figs 1-9
Invention 2	Fig 11
Invention 3	Fig 12
Invention 4	Fig 25
Invention 5	Fig 33
Invention 6	Fig 35
Invention 7	Fig 37
Invention 8	Fig 38
Invention 9	Fig 40
Invention 10	Fig 41

Applicants have herein amended the claims and, in particular, cancelled claims 5, 6, 8, 9, 12, 13, 16, and 17. The claim cancellations are not responsive to the Restriction Requirement, but are made to correct an oversight in the filing of the application. Particularly, it was the Applicants' intent to file this application in the United States with claims corresponding to the claims pending in the

PCT application after the Article 34 Amendment.

Inadvertently, the application was filed with the original claims. Accordingly, the Preliminary Amendment made above merely makes the claim set consistent with the PCT claim set after the Article 34 Amendment.

The Restriction Requirement is improper because the Office failed to identify the claims corresponding to the alleged inventions. In fact, instead, the Office asked the Applicants to identify the claims corresponding to the listed Figures. MPEP section 814 requires that the Office identify the claims corresponding to each different invention alleged to be claimed in the application.

Nevertheless, Applicants identify below the claims corresponding to the figures as listed in the Office Action.

Fig. 1-9 correspond to claims 1-3

Fig. 11 corresponds to claim 4

Fig. 12 corresponds to claims 7 and 10

Fig. 25 corresponds to claims 11 and 14

Fig. 33 corresponds to claims 11 and 14

Fig. 35 corresponds to claims 11 and 14

Fig. 37 corresponds to none

Fig. 38 corresponds to claims 15

Fig. 40 corresponds to none

Fig. 41 corresponds to claims 15 and 18

It can be seen from the list above that there are no claims corresponding to two of the ten alleged different inventions. Further, as the claims currently stand after this Preliminary

Amendment, there are now pending only six independent claims, each having no more than one dependent claim. Accordingly, the theoretical maximum number of possible claimed inventions is six since there can be no restriction between an independent claim and a claim that depends from it.

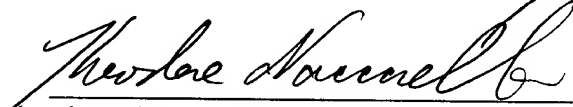
Further, even accepting the Office's partitioning by Figures, the chart above shown that two of the independent claims, claims 1 and 3, correspond to the same invention/Figure group. Therefore, even without any traversal, there are at most five possible different inventions claimed in this application at this time.

Applicants tentatively elect the invention corresponding to the first group, Figures 1-9 and claims 1-3.

In view of the foregoing amendments and remarks, this application is now in condition for allowance. Applicant respectfully requests the Examiner to issue a Notice of Allowance at the earliest possible date. The Examiner is invited to contact Applicant's undersigned counsel by telephone call in order to further the prosecution of this case in any way.

Respectfully submitted,

Dated: 5.15.01



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